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THE EFFECTS OF POLICY CHANGES WITHIN LABOR MOBILITY AND ITS IMPACT ON COMPETITIVENESS AMONG FIRMS: EVIDENCE FROM THE FOOTBALL INDUSTRY'S BOSMAN RULING

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Abstract

In an ever so increasing globalized world where businesses and societies move towards a knowledge-based economy, firms must maintain their competitiveness through acquisition and the retention of high-skilled workers. Based on economists' theories of tacit knowledge and adverse selection among employees, disruption of the policies in place of international labor mobility might alter the competitive landscape among firms in an industry. Using the industry of football in Europe, imbued with tacit knowledge, this thesis sets out to analyze how policy changes in labor mobility affects firm competitiveness. With the emergence of the European single market, high-skilled workers within the EU are able to relocate with ease and employers are able to draw from a significantly larger pool of potential employees. Comparatively, the policy change of the Bosman ruling liberalized the labor market for football players and shares resemblance with a free-trade environment as opposed to a restrictive market prior to the ruling. On the basis of economic theory on sources of competitiveness and labor mobility, this thesis empirically investigates the evolution of the competitiveness in the football industry and how the Bosman ruling affected it. Secondary data was used to capture various measurements of performance, such as football club performance, national team performance, club expenditure and labor mobility of football players. Results show that firm competitiveness is significantly affected by imposing policy changes in labor mobility, greatly benefiting clubs in the five largest European football countries. The thesis also hints to a large underlying reason of competitive imbalances in the industry, which are financial resources. Moreover, arguments of restrictive labor mobility are brought up and analyzed from a domestic economies perspective and are found to be valid in the extent of this thesis.

Keywords: Firm Competitiveness, Labor Mobility, Bosman ruling, Coase Theorem, Football Industry

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1 Introduction

1.1 Topic Presentation

The emergence of the European single market has led to high-skilled workers being able to move freely, making companies now able to attract employees from a larger pool of workers (European Commission, n.d.). Firms who compete to attract and retain the most skilled workers could see themselves increasing their output and ultimately their competitiveness. This can lead to spill-over effects in the domestic economies where the companies operate, as companies grow and generate more taxes and activity. This however raises the question whether the increasing labor mobility could reduce the domestic work force's ability to retain work. A protectionist point of view argues that the import of high-skilled immigrants is a threat that leads to rising unemployment rates, poverty, and disruption of the competitive balance between firms. Labor mobility could on the other hand improve the production levels and output for the domestic work force as labor immigration bring other positive spillovers. These spillovers are largely attributed to work in groups or teams, whereby the benefits appear in industries of a creative nature such as scientific research, consulting, music, and sports (Alvarez et al., 2011). Labor mobility will also increase the organization's ability to distribute knowledge thereby increasing human capital and productivity (Battu, H., Belfield, C.R., Sloane, P.J., 2003).

Asheim (2000) argued that talent and high-skilled employees are the most valuable assets in an increasingly knowledge-based economy. For companies to keep their competitiveness it is imperative to attract and retain the best talent. As knowledge and skill is intangible, in order for firms to compete in an open market, they require greater technological, organizational, and managerial capabilities (Krugman, 1994). Porter (1990) claims that an inflow of high-skilled workers increase the competitiveness of an industry.

This paper will mainly investigate the effects of a change in labor mobility through a liberalization or an institutional change, and what effects this could have on competitiveness among firms**.** Legislators and trade unions may argue that high-skilled workers from other countries could gain at the cost of the domestic work force and contribute to lower wages. At the same time, it may allow the output of the given industry to be raised and thereby contributing to other positive factors.

The industry of football has during the past decades grown to be a gigantic powerhouse in terms of money and being one of the world's largest cultural phenomena. As the global presence of clubs in social media grow and the cost of moving shrinks, clubs are becoming increasingly globalized organizations. Several hundreds of millions of fans and spectators watch games all around Europe, purchase merchandise and travel around the world to watch their teams play. This industry is particularly sensitive to a symbiotic relationship between the two sides of football clubs, the sporting and financial side. The larger the revenues clubs receive from sponsorships, broadcasting rights, and matchday revenue, the greater their chances in succeeding on the sporting side of the organization.

Esteemed clubs in the history of football such as Manchester United, Real Madrid, Barcelona and Liverpool have consistently been at the top of their domestic leagues for decades (Deloitte Football Money League, 2019). Clubs in smaller domestic leagues around Europe seems to never be able to compete due to the financial clout of the Big Five leagues, namely Premier League (England), La Liga (Spain), Serie A (Italy), Bundesliga (Germany), and Ligue 1 (France). However, this was necessarily not always the case.

The policy change and effective liberalization of labor mobility within the football industry took place in December 1995, when the European Court of Justice ruled in favor of an abolishment of a protectionist transfer system (Court of Justice of the European

Communities, Case C-415/93). The ruling, known as the Bosman ruling, is referred to as being a major influence on the modern transfer system in European football. Prior to the ruling, free movement of labor within EU did not apply in the same sense as in other industries. The period before and after the ruling can be viewed upon as a restrictive protectionist market and free-trade open market, respectively. Furthermore, the 3 + 2 rule which imposed restrictions on the number of players of non-European citizenship which were allowed on the pitch simultaneously were eventually removed (Antonioni and Cubbin, 2000). Following the Bosman ruling, football clubs in Europe could tap from a larger pool of high-skilled workers. Competition for high-skilled workers increase and evidence show that talent retention is becoming increasingly important (Bowes, 2010). Negative arguments for increased labor mobility in domestic economies are that increases in foreign high-skilled workers depress wages and home-worker employment (Alvarez et al., 2011).

1.2 Problem Statement

This study aims to uncover whether an institutional policy change in freedom of movement has the capacity to disrupt the competitiveness of firms. Moreover, if liberalized labor mobility is beneficial for all firms in an industry cluster or if it may cause disparity between those of greater and smaller financial positions. Furthermore, the thesis investigates whether increased labor mobility influences the output of domestic high-skilled workers.

1.3 Research Questions

As industries become increasingly knowledge-based and employees become vital to the development and innovation of firms (Hudson, 2005), the skills and tools they possess are hard to imitate for the firms they leave. This is epitomized in the sports industry, as tacit knowledge follows the employees and labor mobility, and tacit knowledge-based industries rely on employees to be propelled further (Gertler, 2003). Cooper (2001) argues that labor mobility of high-skilled workers enables and contributes to the spreading of tacit knowledge.

This might however not be detrimental to the competitiveness of firms since according to Bienkowska (2007), as employees move, they are "ambassadors for their previous workplace.

Posner and Parisi (1997) argue that the industry dynamics following an institutional change in labor mobility will not affect the competitiveness of firms but rather the distribution of wealth, while Taylor (2006) argues that policy changes in labor mobility are negligible. Considering these various arguments for the outcomes of labor mobility liberalization, the Bosman ruling is used to exemplify the impact a policy change can have to an industry which is imbued with tacit knowledge. Furthermore, as human capital is considered a key ingredient in the competitiveness of firms (Rastogi, 2000), and how firm competitiveness stem from people (Joseph, 2012), this paper wishes to investigate how competitiveness is affected by labor mobility through answering the first research question:

RQ1: Did the Bosman ruling have a negative impact on the competitive balance in the football industry?

Alvarez et al. (2011) present different arguments for international labor mobility and its effect on the domestic labor force, mainly the protectionist view of labor unions. Looking at labor mobility from a larger perspective, where the football industry can be viewed as a smaller sample of the global labor market, an increase in aggregate output level can be expected from greater flexibility. This might bring negative consequences in the form of rising inequality, increased exclusion of less fortunate countries, and loss of welfare.

Battu et al. (2003) states that domestic high-skilled workers reap benefits from their foreign counterparts in team production through spillover effects and thus increasing the productivity. Using the football industry as an arena for investigating the spillover effects from increasing labor mobility in total output can help bring insights into how domestic and foreign economies react to policy changes. Spillover effects from having a strong in-flux of import

can contribute to increased competitiveness. Alternatively, the domestic output might decrease as a force of increased unemployment with the domestic high-skilled workers. On the other hand, high-skilled workers that work internationally might bring positive effects to the domestic economy through accumulated practices and knowledge from a different culture once they return. Which poses a second research question:

RQ2: Does spillover effects exist on domestic competitiveness from foreign contribution?

2 Literature review

2.1 Competitiveness

D'Cruz (1992) defines firm competitiveness as the capacity of firms to design, produce and market their products which are better than competitors when considering price and non-price qualities. Furthermore, in searching and obtaining the objective of competitive advantages for firms, companies need to look within their organizations to improve their competitive processes. There are different ways for firms to obtain a competitive advantage, the source of which can be tangible or intangible assets. The competitive processes can be described as the processes that help identify the significance and performance of firm's core processes, hereunder human resource processes, operations management processes, technology management processes and strategic management processes (Ajitabh and Momaya, 2004). According to Dwyer and Kim (2001), firm competitiveness is a combination of processes and assets, where they are created and inherited, respectively. Through having efficient processes, they are able to convert assets into profitability from sales to customers.

In an increasing knowledge-based global economy (Asheim, 2000), it is imperative for firms to meet the challenges of innovating human resource processes to be capable of increasing human capital. Human resource development is the process of increasing the knowledge, skills, and capabilities of every employee in a company (Maier et al., 2014). Silva (1997) describes human resources development as the accumulation of human capital and its

effective investment in the development of an economy. Firm competitiveness today stems from people and employees and not capital (Joseph, 2012). The relationship between human capital and competitiveness can also be examined through labor mobility regarding competitive advantage. Educated and high-skilled workers are likely to innovate and adopt new technologies that in turn boost overall productivity (Asheim, 2000).

Rastogi (2000) shares the sentiment of human capital as a key ingredient to the competitiveness of firms, as knowledge constitutes the typical competitive resource of enterprises. Knowledge is learned, acquired, and developed by the employees of an organization, either collectively or individually. Therefore, a firm's competitiveness lies in the managerial capabilities to utilize the existing human capital and develop and integrate the individual and collective knowledge to be used in production (Rastogi, 2000). Ultimately, human capital is the most important resource for obtaining and sustaining the competitive advantages of firms over time, through development in an ever-changing environment.

The competitive advantage for sporting organizations such as football clubs is first and foremost their players, they allow the clubs to achieve success in competitions that in turn boosts their financial performance. Drawing a parallel to the claims of Rastogi, it is essential for football clubs to have in place a system of training and developing their players so that they are able to displace the outgoing crop of ageing players.

2.2 Labor Mobility

The topic of labor mobility is important in the studies of economics as it is an important part in the operations and output of companies. It affects the continuous innovation and growth of companies, and as mentioned it becomes increasingly important in a knowledge-based world. Having high geographical labor mobility can help increase the industry output through specialization and particularly in high-skilled jobs.

Labor mobility of high-skilled workers might be beneficial economically and in terms of output where there is limited domestic resources (Yep et al., 2016). However, with liberalization of labor mobility and the emergence of the European single market, there is risk for "brain drain" (European Commission, 2014), which refers to tacit knowledge, where labor mobility can harm countries or companies' productivity.

Another factor to consider in assessing the pros and cons of liberalized labor mobility is the impact of labor unions. Labor unions often argue a protectionist view in creative industries that requires teamwork to produce a co-operative output (Alvarez et al, 2011). Moreover, they argue that a liberalized international labor market may have negative effects in the long run on the integrity and evolution of the domestic industries (Alvarez et al, 2011).

However, as Battu et al. (2003) argues, domestic high-skilled workers that take part in cooperation with their foreign counterparts in team production will permanently increase the value of their human capital. In essence, the domestic industry will benefit from the cultural diversity and knowledge from an open labor market adding different knowledge and excelling the industry more powerfully than before.

Hafner (2020) investigated the impact of a local labor market on the French border in removing barriers to labor mobility. He uses a monopsony framework to study the effect of market integration. The analysis was used with data from INSEE and he found that labor mobility restrictions can increase the monopsony power of employers.

2.3 Economics of Sport

During the past few decades, the academics of economics in relation to the industry of sport has grown substantially (Andreff and Szymanski, 2006) as the industry of sports today is comprised of billion-dollar companies and enormous sponsorship deals from global companies to players and clubs alike.

Furthermore, the liberalization of the football labor markets impact on leaving players' home economies has sparked debate over the last two decades after the ruling was finalized. Literature on the topic present both sides of a globalized trade market of high-skilled workers, some of them showing the benefits and inhibitions to home economies through positive spillover effects and depressed wages and employment, respectively.

Kahn (2000) argues that professional sport is an important arena for researching labor markets therein changes of its restrictions. He continues to hypothesize that the sports industry's labor market may be restricted as owners of clubs can form and act as monopsonists and therefore limiting the ability for players to negotiate terms and wages with more than one team. Additionally, he introduces the Coase Theorem brought by Rotterberg (1956) which states that in free agency, e.g., a liberalized labor market, the allocation of players will not have any difference (Kahn, 2000). Furthermore, if a sports owner is not a profit maximizer, there is a chance that they would overpay clubs from whom they are trying to acquire a player under restrictions of the "reserve clause" or those that are free agents (Vrooman, 1997). This could lead to clubs with larger resources buying their way to success, as is supported by Ericsson (2000) with "free-riding" of smaller clubs' talent development.

Moreover, much of the literature on sports economics has been immersed in the invariance principle (Szymanski, 2003; Vrooman, 1995; Eckard, 1998; Dobson and Goddard, 2004; Quirk and Fort, 1992) which states that changes in ownership rights over player services, e.g., liberalization of a football player market, will not influence competitive balance. Weak-form invariance states that the competitive balance among the football teams in Europe would not change in respect to a liberalization of the labor market, and any change would be a zero-sum game from owners to players as the wages would rise and transfer fees fall (Vrooman, 2007). Strong-form invariance holds that restrictions in labor markets would not affect the

competitive balance and the rules of competitive balance, such as revenue sharing and salary caps, will only lead to greater exploitation of talent (Vrooman, 2007).

The effects of increasing competition in sports can as stated previously be looked upon with using the broader scopes of economic theory. Radoman (2015) argues that the effects of positive spillovers in sports through a larger proportion of high-skilled workers in the domestic leagues has a positive effect on the domestic players. Positive spillovers in that regard may be processes such as ways of training and raising their output level to maintain competitiveness within the group, as Alvarez et al. (2011) argues.

Radoman (2015) proceeds to present contest theory in explaining the characteristics and analyzing players output in absolute terms as players output is difficult to quantify through talent or increased effort. Instead, international appearances and minutes per game were used as measures for productivity. He finds that the variable minutes per game gains importance in the time after the Bosman ruling. This support the fact that there is intensified competition in the teams, and it had significant impact on the survival rate of players careers. Coincidentally, theory about liberalized labor markets in football sharing traits with the single European market seems to hold, having a larger pool of high-skilled workers to tap from.

Another relevant source of literature that investigates on the possible positive spillover effects that comes with liberalization of labor markets is the paper by Alvarez et al. (2011). They empirically test if skill levels of local works is raised when exposed to new techniques and practices in European basketball. They analyzed panel data over 20 years and calculate the performance of national basketball teams in international tournaments. Their results are consistent with the benefit of having a liberal policy towards high-skilled worker immigration, as it contributes to an increased competitiveness of the domestic national team.

Milanovic (2005) empirically tested on how globalization affects inequality on the competitiveness of national teams, using data from Champions League, Italian Serie A, and the World Cup. His findings concluded that increased labor mobility led to concentration of high-skilled workers moving to richer domestic economies. However, the methods and results are quite ambiguous and do not resolve the hypothesis with resounding evidence. Similarly, Frick (2009) hypothesized that football player migration would increase substantially after the Bosman ruling took effect however with limited evidence. Furthermore, he presumed that the performance of national teams that was expected to export talent would increase using the two international cup competitions, without being able to draw any finite conclusion. Baur and Lehmann (2007) follow a similar trend as Milanovic and Frick by observing a discrepancy between football nations number of players that play in their home league as well as their national team. Using data from the World Cup in 2006 they conclude that countries success, measured in rankings, gain from trade.

An additional paper that is relevant in explaining international labor mobility is the study by Kleven et al. (2013), where they tackle the socio-economic aspect of taxation in considering labor mobility of high-skilled workers. They analyze how domestic tax rates affect the decision for high-skilled workers in football to move abroad, and their evidence show that England has the largest immigration of players as well as one of the lowest top earnings tax rates. Furthermore, they indicate that high-skilled workers are considering domestic tax rates when they decide where to move, linking back to adverse selection, and this also help to explain the increasing accumulation of better players in England. More recently, Binder and Findlay (2012) exclusively analyzed the effect of the Bosman ruling had on national teams and the competitiveness of domestic football leagues.

Therefore, it would be interesting to investigate the Bosman rulings implications on competitiveness of football clubs and domestic economies using a wider perspective of

economics. On the basis of the Coase Theorem's implication for sports with "rent-seeking" shifting from clubs to players, it implies that the competitiveness of firms would not change as an effect of liberalized labor markets. Adding to this narrative, the invariance proposition also claims that the competitive balance would remain unchanged after the Bosman ruling.

Interestingly, competitiveness of firms is measured in many ways and vary across industries. SaaS rely on returning customers and this might be accomplished through superior products which traces back to the human capital, the sports industry measure competitiveness in games and competitions won, by having a cohesive group of top-performing players. This view is argued by Sloane (1971) and Késenne (2007) as football clubs must strive for utility maximization instead of profit-maximization.

In the following parts of this study, the thesis will build upon the assumptions made in previous studies, especially from the study by Binder and Findlay (2012). As much of the literature on labor mobility and competitiveness is separated, this study will try to bridge that gap and tie them together.

Furthermore, there are some limitations of previous analysis that this thesis addresses. The study by Radoman (2015) only extended to examining the Premier League, which is by revenue, the largest (Deloitte Football Money League, 2019) and may have a skewing effect on the overall result. Empirically investigating smaller leagues as well is important to obtain a greater understanding of the effects of liberalized labor mobility. Baur and Lehmann (2007) piled the effects of imports and exports of football players as a whole, which might damage the integrity of the test as players are not homogeneous (one player can have a much larger effect than another). In other words, the aggregated spillover effect that is analyzed from all players does is not necessarily affecting the national team's productivity.

3 Methodology

The objective of this thesis is to analyze the impact of a policy change in labor mobility and how it affects the competitiveness of firms, using evidence from the football industry. Considering that labor mobility might also affect domestic economies, this paper will investigate the performance of national teams. A policy change leading to a change in countries' in-flux of players thus contributing to spillover effects for the domestic productivity might also be harmful for them as the in-flux possibly off-sets domestic high-skilled workers. On the other hand, countries who experience a greater out-flux or export of high-skilled workers, might see benefits in returning players for the national team through a tougher and more skilled league. Secondarily to the main objective is to provide a broader perspective to competitiveness, hereunder inherent competitive advantages among firms in the form of stronger financial positions and adverse selection among football players.

In order to analyze this, the difference-in-differences methodology (DID) will be used in order to estimate effects of policy changes which is supported by the work of Ashenfelter and Card (1985), Athey and Imbens (2006) and Abadie, Diamond & Hainmuller (2007). The DID approach is set up by observing outcomes for two groups in two separate time periods. By exposing one group to a treatment in the second period and not exposing the second (control) group in either, one can measure the effects through the difference in average gain between the groups. In this way, biases are removed in the second period comparisons between the two groups that stems from inherent differences. The general model can be written as:

$$y = \beta_0 + \beta_1 dB + \delta_0 d2 + \delta_1 d2 * dB + u \quad (1.1)$$

Where y is the dependent variable of measured outcome, dB is a dummy variable that captures differences between the control and treatment groups before the policy change. The second dummy variable *d2* is a time dummy, taking the value of 1 for the second time period. This dummy variable captures any aggregate factors that could have an impact on our

dependent variable even in the absence of a policy change. The coefficient δ_1 is the multiplied form of the interaction term *d2*dB,* for the observations within the treatment group of the second period. Followingly, the DID estimate can be interpreted as:

$$\hat{\delta}_1 = (\bar{y}_{B,2} - \bar{y}_{B,1}) - (\bar{y}_{A,2} - \bar{y}_{A,1}) \quad (1.2)$$

Stata will be used to run and analyze regressions while using Microsoft Excel to organize the data and visually exhibit the results.

4 Data

4.1 Data Sources

In order to perform the empirical analysis, a range of data will be used that measures performance of football clubs and national teams between 1980-2020 and 1992-2020 respectively. Furthermore, cohesive to the secondary objective, the thesis uses data on the proportion of national team players playing in Big Five leagues, transfer expenditure by the top seven European football leagues (measured by average attendance), to aid in providing a more balanced view on competitiveness. The data has been gathered from several reputable sources within the football industry, including FIFA.com, Transfermarkt.com, ClubElo.com and secondary data gathered by Kleven et al. (2013), publicly available at aeaweb.org.

The thesis will use quasi-experimental data as opposed to randomized data. As we want to estimate effects of a given treatment and control group, using randomization would not aid in controlling for the effect of the Bosman ruling as the data might be heavily skewed or imbalanced. Controlling the observations for the control and treatment group will allow for reasonable analysis and more comprehensible classifications.

4.2 Sample description

There are several samples to the empirical section of this thesis. The first sample (see Table 1) was collected from ClubElo.com, which uses a relative strength approach in ranking

football clubs when playing matches. This sample is obtained to measure how liberalization of labor mobility may affect the competitiveness of firms. Using 37 football clubs, the sample consists of the 17 highest earnings clubs from Deloitte's Football Money League (2020) and 20 other clubs. The sample was gathered with balance into historical performance of both rich and less affluent clubs in mind.

Inherent differences in sources of competitiveness are important to consider when analyzing a single policy change's impact on competitiveness of firms. Trying to capture parts of this is done in the second sample (see Table 2). Here the seven biggest leagues, based on average match attendance, is analyzed through the compounded income and expenditure on player sales. In analyzing the Bosman ruling and its impact on competitiveness of clubs and spillover effects on domestic output, the effects should be supported by increased migration of players. If this is not the case, there would be little support for the Bosman ruling changing the competitiveness of clubs. Using secondary data collected by Kleven et al. (2013), we analyze the proportion of national team players playing in the Big Five leagues (see Table 3).

Lastly, to analyze the Bosman ruling's impact on domestic and international spillover effects, 22 national teams' annual ordinal FIFA rankings was retrieved to estimate the effects (see Table 4). Since this paper considers a European point of view, countries outside of Europe were excluded as this thesis aims to limit the effects within the European single market. The national teams were picked to provide a balance for the control and treatment group, including the Big Five and a minor randomization in selecting the rest.

4.3 Variable Description

Using the DID method leads to us having a set of dependent variables with identical independent variables in place of building an extensive regression model.

The purpose of our dependent variables is to capture the productivity of football clubs and national teams, but also the evolution of labor mobility and factors of competitiveness. To capture competitiveness of firms 37 football clubs Elo-scores (see Table 1) between 1980-2020 was used to generate the dependent variable *Clubrankings*. As described above, Elo-scores uses relative strength of entities when playing matches. Simplifying the process, a club who have a high Elo-rating that wins against a club with a low rating will not have the same increase in rating as if the opposite occurred. This measurement is also used by Binder and Findlay (2012) in their paper, which speaks to its validity as measuring performance.

The second sample (see Table 2) rendered the dependent variable *Expenditure* from transfer data between 1980-2020 to analyze the evolution of the financial competitiveness between domestic leagues in Europe. Also, as the thesis aims to capture the change in labor mobility using data from the football industry, the third dependent variable, *NTplayers* was created with the sample from the paper by Kleven et al. (2013) (see Table 3).

In our last sample (see Table 4), the official FIFA rankings for 22 national teams between 1992-2020 was retrieved, and the variable *NTrankings* was generated. As nominal rankings have been re-made on three occasions in this time period, the ordinal rankings were used (the value of 1 being best). However, as the rest of the thesis dependent variables is coherent with the higher value the better, the ordinal FIFA rankings were remade into values ranging between 0 and 1 using the following approach: $NTrankings = (N - rank + 1)/N$

so that they match intuitively in visualization and estimation. Whereby *NTrankings* is the new calculated ranking of national teams, *N* is the number of teams registered in FIFA the same year and *rank* is the ordinal rank retrieved.

The independent variables in our DID-regression were created as dummy variables based on model (1.1). The first generated independent variable, *Large_country*, was generated as a

dummy variable to differentiate between clubs and countries, taking the value 1 if the observed country is England, Germany, Italy, Spain, or France and 0 if not. The second independent variable is a time dummy variable, *Post*, for all observations past the date of the Bosman ruling in December 1995, I.e., assigned the value 0 before January 1996 and 1 after. Lastly, our third independent variable, *Large_post*, is the interaction term between the two other independent variables, and also the variable of interest that measures the difference-in-differences to the treated group. The independent variables will be used to run the regression analysis with each of the dependent variables, forming four separate models:

$$Clubrankings = \beta_0 + \beta_1 Large\_country + \delta_0 Post + \delta_1 Large\_post \quad (1.3)$$

$$Expenditure = \beta_0 + \beta_1 Large\_country + \delta_0 Post + \delta_1 Large\_post \quad (1.4)$$

$$NTplayers = \beta_0 + \beta_1 Large\_country + \delta_0 Post + \delta_1 Large\_post \quad (1.5)$$

$$NTrankings = \beta_0 + \beta_1 Large\_country + \delta_0 Post + \delta_1 Large\_post \quad (1.6)$$

5 Estimation Results

Following the description of the thesis variables and the data samples, this section will present the graphs with the associated regression models.

Looking at competitiveness of football clubs over time, Graph 1 shows that there is a clear divergence by the time of the Bosman ruling ending 1995. There seems to be a competitive balance pre-Bosman among clubs from smaller and large countries alike. The test for whether this graph presents significant evidence is presented in Model I of Table 5. The R-squared and the F-statistic shows an overall significant model. The dummy variable *Large_country* is the only variable not statistically significant, while the other two are statistically significant in the 99th percentile. The coefficient δ_1 shows that clubs in large countries have benefitted from the Bosman ruling, increasing their Elo-rating by roughly 131 points on average. *Post* also show that clubs in smaller countries have experienced a decrease by 60 points on average.

Secondly, Graph 2 show that the net transfer balance in the seven leagues is similar until the 1995-1996 season where they diverge. Model (1.4) is run to see if this representation is significant. Again, the model seems overall significant and all independent variables are significant on a 99% confidence level. The coefficient of the interaction term, δ_1, show that the treated group of large countries spend, on average, 194 million euros more in the post-Bosman period than before. The results of the model are coherent with Graph 2, that smaller countries experience a larger positive net transfer balance and larger countries the opposite.

Next, the results from the third model (1.5) are presented**.** The data gathered in Table 3 is visualized in Graph 3 using normalized values. Here it is apparent that the proportion of national team players of smaller countries increase substantially in the season of the Bosman ruling, to steadily increase up until 2009. The proportion of national team players originating from large countries remains steady during the time period. Testing model (1.5) to investigate whether the visualization is a statistically significant representation, it appears to be the case (see Table 5, Model III). The R-squared and F-statistic shows that the model again is overall significant. Furthermore, all variables are statistically significant at a 95% confidence level, with the interaction term significant on the highest level. It also shows that smaller countries have seen an increased export of talented players by roughly 8 percent, on average, after the Bosman ruling. By observing δ_1, larger countries seem to have a smaller proportion of national team players in the big five leagues on average as an effect of the ruling.

Using the data collected for national team performance to comprehend differences in competitiveness following the Bosman ruling among smaller and larger countries, the average performance of the 22 national teams was plotted in a graph over time (see Graph 4). The recalculated FIFA rankings were normalized to rescale the values so that they share the same starting point in 1996, when the Bosman ruling had come into effect. The graph shows that the evolution of large countries' average ranking has been steady over the estimated time

period, having approximately the same average FIFA ranking in 1996 and 2020. Smaller countries seem to have experienced a worsened competitiveness as a trend before the ruling which ever so slightly stagnates after the ruling, decreasing the incline. The overall impression is that the ruling might have had little effect. To estimate the significance of any effect the regression model (1.6) was run, and the results are presented in Table 5 model IV. Both of the R-squared and F-statistic points to an overall significance of the model, and all independent variables statistically significant on the 99% confidence level. The model's coefficient of interest, δ_1, showing that the effect on the treated group of large countries is rendering better performances on average. Furthermore, the estimation results show that the small countries are on average less competitive.

6 Discussion

6.2 Competitiveness of football clubs

Looking at Graph 1, it is clear that the clubs of smaller countries were able to retain their competitiveness in the period between 1980-1995, as they could keep their most talented players. It can be clearly seen that the competitiveness of firms diverges when introduced to a policy change in labor mobility. In the graph, there might be outliers that aid in pulling the trend lines in separate directions, but it remains quite clear that there is an immediate effect following the Bosman ruling. When analyzing the models' significance, it appears that what is visualized in the graph can also be used for drawing a conclusion on the competitiveness of football clubs. From the estimated model, the independent dummy variable *Large_country* is not significant on any of the normal levels, which can be interpreted as there being disparities between different clubs in the sample of the treatment group. This is somewhat expected, as the performances of all clubs from the large countries does not follow the same trend. But it is interesting that it does not show significant differences to the smaller clubs on average.

As the coefficient of the interaction term in model (1.3) shows a significant jump in Elo-score for the treated group, it can be argued that this can add to previous literature that club competitiveness is significantly affected by the Bosman ruling. The thesis discussed the invariance principle in the literature review section and how liberalization of labor markets will not affect the competitive balance. According to weak-form invariance, liberalizing the labor market would only switch the rent-seeking from owners to players, it however looks as though it has had a significant impact on the competitiveness as well.

By confirming that the competitive balance has been worsened and it is more difficult for clubs in smaller countries to be competitive, it is important to discuss why. Unlike the business world, football clubs strive for utility- and victory-maximation as opposed to profit-maximization, explained by Sloane (1971) and Késenne (2007). When examining Graph 2 and corresponding model (1.4), it can be seen that the bigger leagues out-spend the smaller leagues in the sample by a large margin. This is also depicted by the coefficient of the interaction term, showing the differences in the treated group to increase (negatively) substantially after the Bosman ruling.

The results from the various models show that there might be evidence of what Ericsson (2000) discussed regarding "free-riding" of smaller clubs' talent development and larger clubs buying their way to success. Model (1.5) shows that the proportion of players from various smaller countries has increased as they move to play in one of the Big Five countries. It can be seen in both initial models (1.3) and (1.4) that the competitiveness of clubs has decreased from the perspective of smaller countries. A large aspect that should be considered is the net transfer balance. Global interest, sponsorships, GDP per capita, inhabitants, purchasing power, and ultimately financial power of leagues is what affects the expenditure of clubs. Therefore, it would be difficult to retain the best talent in smaller leagues without the safety implied by labor restrictions. The Bosman ruling may have served as a catalyst to

the increase in net transfer expenditure, but as bigger leagues gain more viewers and fans, they receive more revenue from TV-broadcasting and tickets. Smaller clubs may very well work as “feeder clubs”, as can be seen in Graph 2 with positive transfer balances.

6.1 Spillover effects in labor mobility increasing domestic competitiveness

The four models in the previous section were run and based on theory of competitiveness and labor mobility, presented in section 2. Battu et al. (2003) argued that by importing foreign workers, the productivity levels of the domestic workforce would increase through spill-over effects. As can be seen in the results, the interaction term’s coefficient show that large countries do experience spill-over effects as argued by Battu et al (2003) and Alvarez et al (2011) on a 99% confidence level. Interestingly, it does not seem to have had any positive impact in improving performances for smaller countries who experience larger exports of high-skilled workers. It can be observed that there is disarray in the graph, most likely to be explained by the large tournaments that happens every other year (FIFA World Cup and European Cup). As Frick (2009) assumed, that the performance of exporting countries would increase, it would appear to be a sound and rational thought. As spill-over effects are seen in domestic economies who import, it would be reasonable to predict that exporting countries would benefit from their best talents increasing the productivity and performances of their national teams from playing in bigger leagues. From the data that was gathered in this thesis, this does however not seem to be the case.

The empirical evidence provided by Baur and Lehmann (2007) found that countries who are exporting and importing players gain in a competitive measure. From the data presented in this thesis, it seems evident that the Bosman ruling had some effect on national team performance for all countries. In addition, model (1.6) and Graph 4 use FIFA rankings data from 28 years contrary to the sample period of the 2006 World Cup by Baur and Lehmann.

Using model (1.5) to try and analyze if the concentration of players from smaller countries in the Big Five leagues have changed seems clear from Graph 3 and the regression results. This was expected, as labor mobility is liberalized, the most talented players and in parallel the most skilled workers, are drawn to where opportunities to perform on a higher level exist. Interestingly, the models' δ_1 coefficient reads as though the proportion of national team players from the largest leagues in Europe is diminished. Drawing a parallel to the labor union perspective where a liberal policy on labor mobility might affect home-worker employment rates seem to, on average, hold its argument in this model. However, this effect is quite small in the treatment group but provides insight into the significant increase of small countries export of players. This model's estimates provide a sound representation of the effects following the Bosman ruling and are coherent with the work by Milanovic (2005) finding a higher concentration of high-skilled workers moving abroad. The results from the two models, (1.5) and (1.6), suggests that the competitive balance among national teams has not changed, whereby the larger countries still stay ahead. These can be interpreted as somewhat surprising, as the majority of previous literature suggest that countries who export talent would become more competitive.

6.3 Critical review

In obtaining the data for model (1.6), the thesis used ordinal rankings to measure performance. This is a fitting way of measuring performance of national teams as it does express trends and evolutions in positions. However, since FIFA re-made their point system on several occasions, using nominal rankings were impossible without specification issues. Using nominal rankings as was done with football clubs would perhaps be a more concise way of measuring the evolution of a national team, using each game to add or subtract points. Also, it would benefit the model from using a larger sample in the pre-intervention of the policy change, as it would make the results more robust. The sample also had to be reduced

to exclude ex-Soviet Union or Yugoslavia nations, as the data for these countries was inaccurate before the Bosman ruling. Secondly, the independent dummy variable *Post* might be noisy as it has been discussed in previous literature on the topic, as it captures a variety of unattested variables. In using the DID method, there might be bias in the estimated standard errors and other weaknesses that comes with DID regression.

7 Conclusion

7.1 RQ1: Did the Bosman ruling have a negative impact on the competitive balance in the football industry?

Evidently the Bosman ruling has had an impact on the industry of football as a whole. In model (1.3), it can be interpreted that the disparities between clubs from larger countries have gained an advantage through the liberalization of the labor market. Through being able to acquire talents from a larger pool, victory-maximizing clubs from large countries are able to impose their gravitas on smaller clubs. It has become increasingly difficult for smaller clubs to stay competitive and the clubs from the Big Five countries are able to gain at the cost of smaller clubs. Using model (1.4) it is evident that the competitive balance is largely disrupted by disparities in financial position between different domestic leagues.

7.2 RQ2: Does Spillover effects exist on domestic competitiveness from foreign contribution?

On the basis of spillover effects in productivity presented by Battu et al. (2003), the thesis analyzed a sample of 22 national teams and found some evidence of spillover effects of importing countries. Building from previous literature, the thesis' results indicate that the Bosman ruling have had some effect on the performance of national teams on average, adding to the conclusions by Binder and Findlay (2012). The thesis also found that there is a higher concentration of football players from small countries in the Big Five leagues but found no support that this would increase the competitiveness of their respective national teams. Lastly, the spill-over from increasing foreign contribution due to liberalized labor

mobility decreased the home-worker employment in the Big Five leagues, supporting the arguments of labor unions.

7.3 Future Research

This thesis was conducted to establish the effects of a policy change in labor mobility, especially in regard to firm competitiveness. By using the industry of football, where footballers may be regarded as goods instead of employees, however not unwillingly, could be extended to analyze other industries. As human resource management becomes increasingly important in organizations towards a knowledge-based society, it could be interesting to use methodology from this thesis and extend it further.

Moreover, further research could include using a larger sample size of clubs and national teams, through including South America and Africa. It would also be interesting to build an extensive regression model, including additional variables such as wages, financial performance in terms of revenue, broadcasting and match-day income.

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Appendix

Tables

Table 1

Table 1. Description of sample: Football Clubs

ENG	Manchester United	GER	Borussia Mönchengladbach
ENG	Manchester City	GER	Bayer Leverkusen
ENG	Liverpool FC	ITA	Juventus FC
ENG	Chelsea FC	ITA	FC Internazionale Milano
ENG	Arsenal FC	ITA	AS Roma
ESP	FC Barcelona	ITA	SSC Napoli
ESP	Real Madrid	ITA	AC Milan
ESP	Real Sociedad	POR	SL Benfica
ESP	Sevilla FC	POR	Sporting Clube de Portugal
ESP	Atlético de Madrid	SWE	IFK Göteborg
FRA	aris Saint-Germain FC	BEL	RSC Anderlecht
FRA	Olympique Lyonnais	RUS	FK Spartak Moskva
FRA	lympique de Marseille	POR	FC Porto
FRA	AS Monaco FC	NED	AFC Ajax
FRA	Saint-Étienne FC	NED	PSV Eindhoven
GER	FC Bayern München	BEL	Club Brugge KV
GER	Borussia Dortmund	GER	Hamburger SV
GER	FC Schalke 04	NED	Feyenoord
		SER	Red Star Belgrade

Table 2

Table 2. Description of sample: Leagues

ENG	Premier League
ESP	La Liga
FRA	Ligue 1
GER	Bundesliga
ITA	Serie A
POR	Liga NOS
NED	Eredevise

Table 3

Table 3. Description of sample: National Team Players

Germany	Netherlands
England	Denmark
France	Norway
Italy	Greece
Spain	Austria
Portugal	Finland
Belgium	Iceland
Sweden	Poland
Republic of Ireland	

Table 4

Table 4. Description of sample: National Teams

Germany	Denmark
England	Norway
France	Scotland
Italy	Greece
Spain	Austria
Portugal	Turkey
Belgium	Finland
Sweden	Iceland
Republic of Ireland	Switzerland
Netherlands	Romania
Russia	Poland

Table 5

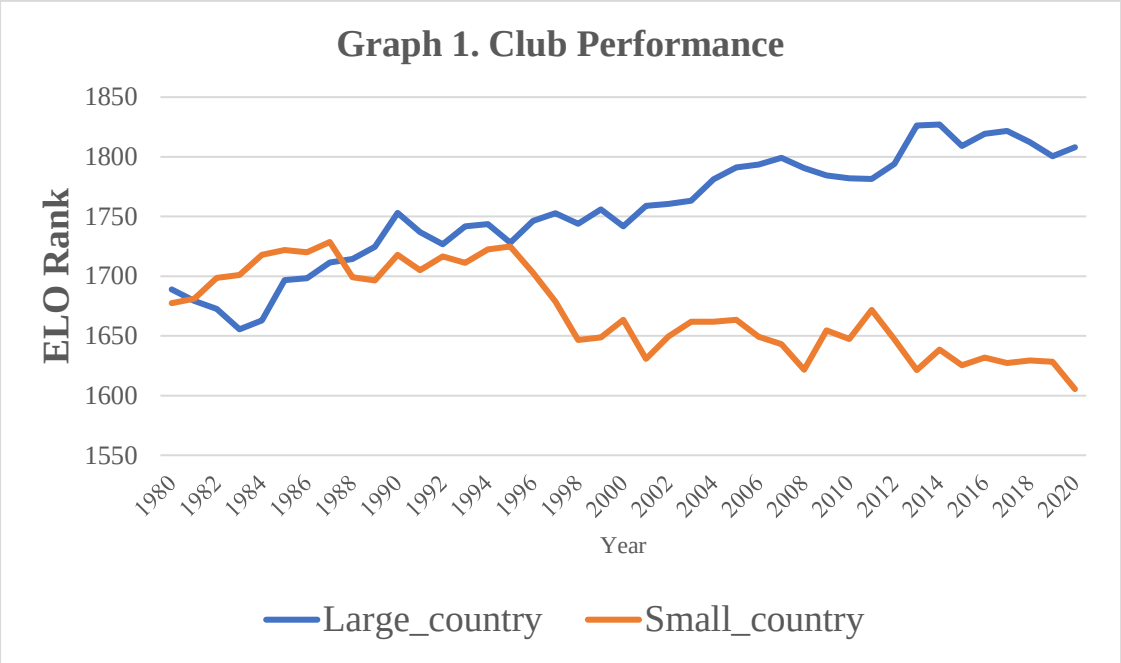
Table 5. Regression estimation results

Variable	Model I (1.3)	Model II (1.4)	Model III (1.5)	Model IV (1.6)
Dependent variable	Clubrankings	Expenditure	Ntplayers	NTrankings
Constant	1704.216***	1.489031*	0.2139834***	0.8749745***
	(288.12)	(1.83)	(9.02)	(78.47)
Post	-60.16864***	71.54837***	0.0750217**	-0.0295875***
	(-6.56)	(6.31)	(2.51)	(-2.60)
Large_country	6.166302	-8,965419***	0.7744704***	0.0834885***
	(0.76)	(-4.85)	(32.53)	(6.15)
Large_post	131.0326***	-194.2903***	-0.0900247***	0.038821***
	(11.21)	(-8.58)	(-2.98)	(2.64)
R-squared	0.1732	0.2236	0.7003	0.2283
F-statistic	105.61***	36.59***	832.79***	175.44***
N	1517	287	442	638

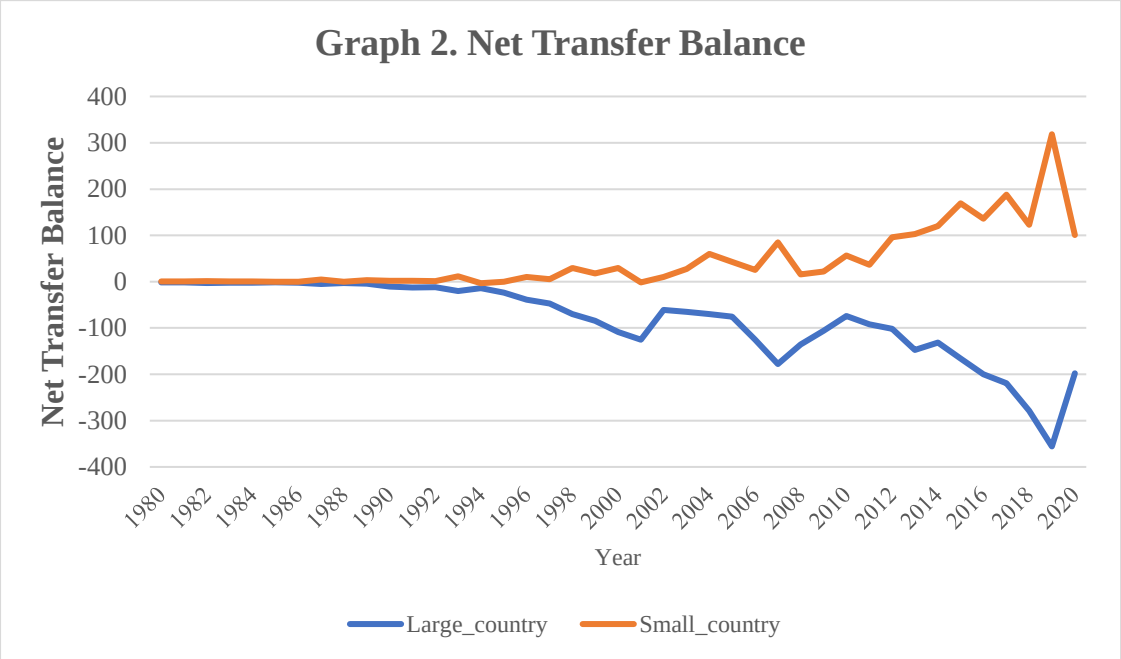
*, ** and *** each denotes statistical significance on the 90th, 95th and 99th confidence levels respectively.

Graphs

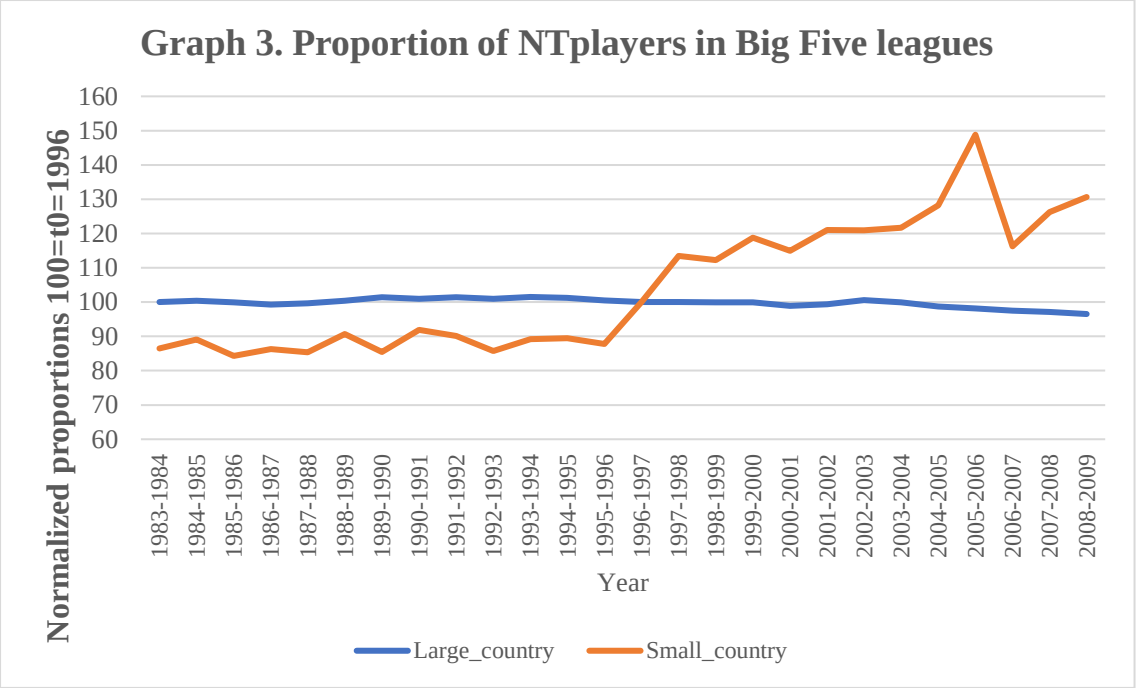
Graph 1



Graph 2



Graph 3



Graph 4